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AUTHOR Broughton, Georg
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ABSTRACT

This practicum involved the design and implementation of a 4-station computer learning laboratory to enhance the academic learning gains of two visually impaired, two hearing impaired, and two dyslexic students at the Gainesville (Florida) Job Corps Center. The learning laboratory was equipped with computer hardware and software to perform the functions of human surrogate readers, writers, and interpreters. Students were followed while preparing for the General Education Development (GED) examination. Students were given two simulated TABE (Test of Adult Basic Education) tests and a mock GED examination over the course of 4 months. The group that used the sensory-bridging equipment as an alternate modality scored significantly higher than their control counterparts. Appendices include a program brochure, results of reputability and evaluability assessments, budget information, and detailed results of the simulated tests. Contains five references. (DB)

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A Test and Control Experiment that will Assess the Effectiveness of Sensory-Bridging, Computer Hardware and Software, in Aiding Visually-Impaired, Deaf, and Dyslexic Students in Achieving Greater Academic Gains as Reflected by Attainment of Proportionately Higher Scores on Simulated Versions of the Standardized TABE Test and a Simulated GED Examination

by

Georg Broughton
Cohort 58

A Practicum Report Presented to the Master's Program in Child Care, Youth Care, and Family Support in Partial Fulfillment of the Requirements for the Degree of Master of Science

NOVA UNIVERSITY
1994

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Authorship Statement

I hereby testify that this paper and the work it reports are entirely my own. Where it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give testimony freely, out of respect for the scholarship of other workers in the field and in the hope that my own work, presented here, will earn similar respect.

March 28, 1994
Date

George Broughton
Signature of Student

Abstract

A test and control experiment that will assess the effectiveness of sensory-bridging, computer hardware and software, in aiding visually-impaired, deaf, and dyslexic students in achieving greater academic gains as reflected by attainment of proportionately higher scores on simulated standardized TABE tests and a simulated GED examination. Broughton, Georg, 1994: Practicum Report, NOVA University, Master's Program in Child Care, Youth Care, and Family Support. Descriptors: Training the Visually-Impaired/Training the Hearing-Impaired/Training the Learning Disabled/Training the Sensory-Impaired/Sensory-Bridging Equipment/Computer Training for the Sensory-Impaired/Job Corps Special Needs Program.

A disproportionate number of visually-impaired, hearing-impaired, and dyslexic students, have consistently scored within the bottom 10% of all Gainesville Job Corps students taking the standardized Test of Adult Basic Education (TABE). The TABE is a measure of academic performance. It is used as a measure by instructors in determining whether or not a student is academically prepared to score well on a standardized General Education Development examination (GED).

A survey was administered to departing sensory-impaired, and dyslexic students concerning the effectiveness of existing training modality. The respondents indicated by a substantial majority, that the existing academic training modality was inadequate. The survey group concluded that the existing modality was insufficient in overcoming their respective sensory impairments, thereby denying them access to the requisite academic data needed to score well on standardized GED tests.

The author designed and implemented a strategy designed to enhance the academic learning gains of visually-impaired, hearing-impaired, and dyslexic students at the Gainesville Job Corps Center. This was accomplished through the introduction of state-of-the-art, sensory bridging computer hardware and software into the educational modality of the classroom.

A 4-station computer Learning Laboratory was constructed, and equipped with machines that perform the functions of human surrogate readers, writers, and interpreters. Academic information previously unattainable because of blindness, deafness, or dyslexia, became readily accessible through the use of this equipment.

Two groups of blind, deaf, and dyslexic students with similar intellectual quotients, and academic backgrounds were followed while preparing for the General Education Development examination (GED). One group performed their academic studies in the standard Job Corps classroom utilizing the optimum existing resources. The second group prepared for the GED by utilizing the sensory-bridging equipment in the Learning Lab.

The two groups of sensory-impaired, and dyslexic students were administered two simulated TABE tests, and a mock GED examination over the course of four months. The group that utilized the sensory-bridging computer hardware and software as an alternate modality scored significantly higher than their control counterparts.

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Chapter 1

INTRODUCTION AND BACKGROUND

Job Corps is the only federally funded residential, educational, and vocational training program for at-risk youth between the ages of 16 through 22. It has been deemed a quiet success, reaching thousands of at-risk youth in communities with documented needs. Job Corps have served 1.5 million youths since it was established in 1964, 28 years ago. 81% of Job Corps graduates attain employment, enter the military, or pursue higher education.

Job Corps has struggled for many years to become the unique, and successful program it is today. In the very early days, Job Corps was essentially an untested idea. Job Corps was viewed by many of its detractors, as the most controversial of all "Great Society" programs. This early controversy effected funding for Job Corps and Congress promptly responded by reducing the number of centers from the originally proposed 106, to a low of 53 centers in 1969. Through experimentation and innovation Job Corps was able to capitalize on its initial mistakes. Job Corps found that conventional education and training were ineffective with poor, out of school, unemployed youth, or those who were not in the labor force. To succeed, Job Corps developed its own model for residential, open-entry/exit, vocational, and academic training. Free from the controversies of its infancy, Job Corps received increased funding in the late '70's. This funding was the first tangible evidence that the future of Job Corps would be characterized by growth and expansion. The increased funding allowed the program to expand to today's 108 centers throughout the country. The Job Corps centers, including the Gainesville

Center, now serve more than 68,000 youth per year.

The focal point of the Jobs Corps program is the preparation of the student for taking, and passing two examinations. The examinations will allow them to attain their high school diploma equivalency, and recognized trade certification. The tests are referred to as the General Education Development examination, and the test of vocational competency.

THE SETTING IN WHICH THE PROBLEM OCCURS

The Gainesville Job Corps Center provides academic and vocational training to at-risk youth between the ages of 16 and 22. In addition, the Gainesville Center has been chosen by the Atlanta-based Region IV office of the Department of Labor as the region's designated Handicapped Center. Federal mandate requires that each region designate at least one Job Corps Center within that region to serve students with ambulatory, visual, hearing, and learning disabilities.

The physical plant of the Gainesville Job Corps Center has been modified to accommodate wheelchair users, braille has been raised on signage, and volunteers have been recruited to sign for deaf students, and tutor learning disabled students.

Job Corps' non-traditional, open-ended program is available to both residential and non-residential applicants. The residential enrollments at the Gainesville Job Corps Center are consistently high, accounting for an average of 325 of the available 350 slots. Thirty slots residential spaces are reserved for handicapped, or challenged students. Region IV office has identified an increase in the number of physically handicapped, and learning disabled applicants to the program.

The Gainesville Job Corps Center, and indeed each of the 108 Job Corps Centers nationwide, was established to serve a very specific customer group. The Gainesville Center serves a customer population consisting of at-risk youth between the ages of 16 and 22. The student population is predominantly African-American, and Hispanic-American youth from the city and European-Americans from rural regions. These customers are traditionally high school drop-outs, usually with at least one encounter with the criminal justice system. They are, as a rule, on some form of public assistance such as welfare or food stamps. Many of these young customers are the products of single-parent homes, or have been described in their personality profiles as hailing from dysfunctional families. Many have been warehoused either by Health and Rehabilitative Services, or by the penal system prior to their arrival at the Gainesville Job Corps Center.

THE SPECIAL NEEDS COORDINATOR'S ROLE IN THE SETTING

The Special Needs Program of the Gainesville Job Corps Center is a dynamic service division committed to assisting students overcome barriers to optimum independent functioning (see Appendix A). The program is designed to serve non-ambulatory, visually and hearing impaired, students, as well as those with learning disabilities as determined by the Region IV office.

Handicapped students, like their non-handicapped counterparts, must meet certain academic and vocational requirements while enrolled at Job Corps. Depending on the need, the Special Needs Coordinator will provide the student with special classroom materials in an attempt to compensate for any deficit resulting from the disability. The Special Needs

Coordinator, therefore, assists the individual academic and vocational instructors by locating or modifying materials needed to prepare the student for standardized testing in both arenas.

The Special Needs Program is a division of the Department of Education. The program is administered by a Special Needs Coordinator, and a part-time volunteer. The Special Needs Coordinator is supervised by the Director of Education and Vocational Training.

Chapter 2

THE PROBLEM

THE PROBLEM STATEMENT

The problem that the Gainesville Job Corps Center is experiencing, and indeed the Special Needs Program must solve, is the high number of challenged students who fail to attain their high school equivalency diploma. A disproportionate number of visually-impaired, hearing-impaired, and dyslexic students have consistently scored within the bottom 10% of all Gainesville Job Corps Center students taking the standardized Test of Adult Basic Education (TABE). The TABE test is used as a measure of academic performance, and is used to determine whether or not a student has reached the academic level necessary to score well on the General Education Development test (GED). The attainment of the GED diploma is one of the primary goals for all Job Corps students. Since January of 1987, a total of 28 vision-impaired, hearing-impaired, and dyslexic students took the GED test, and zero percent achieved a passing score.

DOCUMENTATION OF THE PROBLEM

A reputability assessment (Rossi & Freeman, 1993) was conducted among relevant stakeholders at the Gainesville Job Corps Center. Exiting handicapped students were surveyed regarding their experiences with, and assessments of, the effectiveness of current training modality used to prepare sensory-impaired, and dyslexic students for the General Education

Development examination.

The results of the reputability assessment (Rossi & Freeman, 1993) showed that the available academic training materials are not designed to meet the special needs of the target population. (See Appendix B)

A process study (Rossi & Freeman, 1993) which consisted of an examination of participants in the Special Needs Program, showed that the current educational techniques do not conform to the original design of the program. That is to say that the program was designed to provide materials that would serve to remove barriers to academic training, and allow learning to be experienced on the same level as the non-challenged students.

In particular vision-impaired students, because of their disability, cannot utilize the books that convey the necessary course work. Hearing-impaired students do not understand the vast amount of verbal instructions provided by teachers in the classroom. Dyslexic students suffer the same fate as the visually-impaired students.

ANALYSIS OF THE PROBLEM

Overall academic performance should improve if academic training materials used in the classroom to prepare the target population for the GED could be upgraded. Once sensory-deficits have been removed or compensated for, the target population might be expected to progress academically at the same rate as his non sensory-impaired, non-dyslexic counterpart. The resulting academic improvement can be measured on the standardized TABE test. Sensory-impaired and dyslexic students should therefore be expected to score higher on the GED test. This result may be expected given that the targets do not possess secondary disabilities, or lower

intelligence quotients that might cause stochastic fluctuations.

The primary factor that has contributed to the existence of this problem has been the unavailability of effective training materials that could pierce the communication barriers that exist as a result of blindness, deafness, and dyslexia. The type of materials needed to train this target population must be capable of eliminating sensory barriers to learning.

Sensory deficits hamper teaching and learning in a variety of ways. Blindness, dyslexia, and deafness bar access to conventional learning tools such as books. Deafness also impairs the student's ability to acquire information from the spoken, classroom lecture. In short, information cannot be introduced or received via the "normal" channels.

In summation, if the target population could learn without the barriers to communication resulting from sensory deficits, academic gains might be reflected on standardized tests.

Chapter 3

GOALS AND OBJECTIVES

THE GENERAL GOAL

The general goal of this practicum project is to enhance the academic learning gains of visually-impaired, hearing-impaired, and dyslexic students at the Gainesville Job Corps Center. This will be accomplished by introducing state-of-the-art, sensory bridging computer hardware and software into the educational modality of the classroom. This equipment will compensate for the sensory-deficits and allow students to make greater academic gains as reflected by standardized testing. Although the equipment will be used for training, it will not be used during the actual testing process.

THE OBJECTIVES

Objective 1) To have the two visually-impaired participants in the test group, score a minimum of 10 percentage points higher than the control group of matched students taking a mock General Education Development (GED) examination. The test is to be administered March 1, 1994, three months after the program initiates on December 1, 1993.

Objective 2) To have the two hearing-impaired participants in the test group, score a minimum of 10 percentage points higher than the control group of matched students

taking a mock General Education Development (GED) examination. The test is to be administered March 1, 1994, three months after the program initiates on December 1, 1993.

Objective 3) To have the two dyslexic students score a minimum of 10 percentage points higher than the control group of matched students taking a mock General Education Development (GED) examination. The test is to be administered March 1, 1994, three months after the program initiates on December 1, 1993.

Chapter 4

SOLUTION STRATEGY

REVIEW OF EXISTING PROGRAMS, MODELS, AND APPROACHES

Traditionally, the use of surrogates such as teaching assistants to read assignments for blind and dyslexic students, and interpreters to translate for deaf students, have been utilized to compensate for sensory deficits, and thereby enhance academic learning at the Gainesville Job Corps Center. No empirical data has been maintained or formative research conducted (Rossi & Freeman, 1993) to assess the effective of interpreters and readers on the academic gains of sensory-impaired and dyslexic students in a Job Corps environment. The Job Corps environment is fundamentally different from the school environment in that the educational curriculum is vocationally and academically oriented, open-ended, and self-paced.

The use of readers and interpreters in the classroom has yielded mixed results according to an assessment completed by nine teachers at the Gainesville Job Corps Center (see Appendix C). According to the survey, vision-impaired, dyslexic, and hearing-impaired students who were assisted by human readers and interpreters demonstrated a definite increase in their overall academic performance as reflected by increased scores on standardized TABE tests. Unfortunately readers and interpreters were deemed prohibitively expensive to employ on a full-time basis.

Twelve volunteers were recruited over a three year period to perform these functions. Some volunteers were inconsistent in their daily attendance. This factor reduced the academic

benefit to the students. Other volunteers, for various reasons beyond the center's control, had to quit their volunteer service. This further impacted the already marginal gains experienced by the target group as a result of the intervention.

According to the survey, when readers and interpreters were actively present in the classroom, they were only available for a portion of the academic day, intervention, therefore, was not provided for all academic classes. The volunteers were not available after-hours when most students studied, or otherwise prepared for tests. The volunteer appears to have only offered a service, and not a solution to the problem of sensory-impairments impeding academic learning.

A second factor which contributed to the existence of the problem was the conspicuous absence of technologies that could compensate for the dyslexic students' inability to decipher, the blind students' inability to see, and therefore read, and the deaf students' inability to hear which also affects her ability to read. Tape recorders, and xerox enlargements of reading material, had a marginal impact in fostering the communication of the academic subject matter to the respective targets. Tape recorded material specific subject matter, when available, was not very broad. The tape recorder, in addition, was ineffective as a tool for writing.

DESCRIPTION OF SOLUTION STRATEGY

The solution to the above-stated problem is the establishment of a 5-station computer Learning Laboratory for use by the Special Needs Program target population. This equipment will perform the functions of human surrogate readers and interpreters. Academic information

once unattainable because of blindness, deafness, or dyslexia, will be readily accessible by use of this equipment. This computer equipment is state-of-the-art in design. The equipment possesses features such as the ability to type the spoken word without manipulation of a keyboard, and synthetic speech capable of vocalizing text scanned from printed material. This hardware has been recommended by the Council of Education for People with Disabilities as effective in overcoming barriers to learning.

Twelve visually-impaired, hearing-impaired, and dyslexic students will participate in this evaluative study. These students will be selected from the pool of Special Needs students currently enrolled at the Gainesville Job Corps Center. Three homogeneous test groups of two students each will be formed. The first group will consist of two visually-impaired students; the second group will consist of two deaf students, and the third group will consist of two dyslexic students. There will be three groups of controls that will match the test groups accordingly. The test and control groups will engage in academic study geared towards attainment of high school diplomas. The test, or experimental group, however, will perform all class assignments in the Learning Lab utilizing the state-of-the-art computer software and hardware. The controls will perform all academic tasks utilizing existing materials under optimal circumstances in the conventional classroom setting. These materials consist of tape-recorded text books, plastic page magnifiers, and xeroxed enlargements of printed text. The sensory-bridging computer hardware and software will be utilized by the test group for training purposes only. They will not utilize this equipment while taking the two simulations of the standardized TABE tests, or the simulated GED examination.

The test group will use equipment that possesses features such as the ability to type the spoken word without manipulation of a keyboard, and synthetic speech capable of vocalizing text scanned from printed material.

The Learning Lab will consist of the following resources: Three IBM Ultimedia Computer Systems. Three of the five workstations in our proposed learning lab will consist of these computers. Each of the computer systems will include Voicetype voice recognition (IBM Special Needs Systems, 1992). This software will allow teachers to communicate with deaf students. As the instructor talks, the speech is translated into typed words that appear on the monitor before the student. This system will allow students with limited use of hands to enter information by voice instead of keyboard. Each computer will include Vocaleyes software (IBM Special Needs Systems, 1992). Vocaleyes will translate all typed entries into the computer into synthetic speech. A student who is unable to speak may communicate with the teacher and other students using this software .

The ScanJet scanner used with the IBM computer, and the above mentioned Voicetype and Vocaleyes software will perform the following tasks: The student can place written material such as a standardized examination on the Scanjet. The examination will appear on the computer monitor. The Vocaleyes, through synthetic speech, will read aloud the examination for the student with the aid of the Dectalk Speech Synthesizer. The student, either through the manipulation of the keyboard, or with Voicetype can split the screen and verbally indicate his/ or her multiple choice answer on the answer sheet, which will appear next to the examination on the monitor. When the student has completed the exam the IBM Laser Printer will print out

a copy.

The fourth work station will consist of a Reading Edge Kurzwel Page Reader. This device reads all printed text aloud for blind and dyslexic students. A written document or book is placed atop the reader. The reader, through synthetic speech will read the material aloud.

The fifth work station will consist of an Optique II Side by Side Closed Circuit Television Video Enhancer. This unit will magnify to 20x all written text. The enlarged image will appear on a monitor. Students with vision impairments can perform all written assignments using this equipment.

Each of the three computer stations will be equipped with multi-media disc readers. This system will allow self-paced, on-on-one, interactive academic training in a variety of disciplines including Math (basic through algebra), and Reading (vocabulary through syntax and comprehension).

Chapter 5

STRATEGY EMPLOYED - ACTION TAKEN AND RESULTS

During the period spanning October 4 through November 17, 1993, several procedural objectives had to be achieved prior to the commencement of the substantive evaluative study. The procedural prerequisites were as follows:

1) I had to lay out and submit plans for the remodeling of two rooms which would ultimately become the Special Needs Learning Lab.

2) The sensory-bridging computer hardware and software was identified, purchased, and received.

3) The sensory-impaired, and learning disabled students to be tracked in the evaluative study are identified.

1) The Learning Lab

The Learning Lab would ultimately house the sensory-bridging computer equipment, and serve as the training room for the test group. The room would be used for training only, and not during the administration of standardized testing.

The original site of the Learning Lab consisted of two rooms located in the Gainesville Job Corps Center Education Department, adjacent to the Special Needs Program office. One of these areas was previously used as a storage facility, the other as a tutoring room. The rooms were divided by a thin wall. The floor of the former tutoring room was covered in a shag

carpet, while the floor of other room was covered in broken tile. The ceiling above the storage room was higher than that of the tutoring room.

The original project budget of $52,181.19 (see Appendix D) did not allow for building modifications after the purchase of the equipment. I therefore drew up the structural modifications myself. In another substantial cost-saving measure, I enlisted the services of students enrolled in the Building, Tile-Setting, Painting, and Carpentry Trade Programs which are part of the Gainesville Job Corps Center. Under the direction of their instructors these students began the renovations of the would-be Learning Lab according to my plans (see Appendix E).

The bulk of the renovations took place between October 4 through February 28. During that time the construction crews removed a 9 x 12 foot wall, raised a 24 x 24 foot ceiling, removed a doorway, removed old carpeting, painted the four interior walls, installed five additional electrical outlets, and re-tiled the 24 x 24 foot floor. Tile was used in lieu of carpet because the static electricity generated by movement on the carpet could have short-circuited the computer equipment.

Although construction took place during this period the students in the test group, nonetheless, utilized the computer lab for academic training from December 1, 1993 to March 1, 1994. Minor renovations in the Learning Lab continue through March of 1994. Although the evaluative study concluded on March 1, 1994, the Learning Lab is currently utilized by a greater number of students in the Special Needs Program.

2) Sensory-bridging computer hardware and software is identified, purchased, and received.

Sensory-bridging computer hardware and software replaced the conventional education and training modality, and enhanced the effectiveness of the standard mediums used in the Learning Lab to convey the academic subject matter. In short, the machines performed reading, and writing functions for the sensory-impaired, and dyslexic students.

The equipment consists of three 20" monitors, three high capacity central processing units, three scanners, three printers, three CD ROM multi-media systems, one electronic page reader, and one braille printer. Each computer system includes speech-to-type, and print-to-speech systems (see Appendix E).

The application of this technology in the Job Corps setting for purposes of enhancing the performance of sensory-impaired students has a foundation. I initially observed the use of some of this technology at the Florida Center for the Blind in Ocala, Florida. There, the equipment was used to allow blind individuals access to a broader range of printed materials, and concurrently, allowed deaf people to communicate without the use of sign language.

The successes of the Florida Center's program were not supported by empirical data other than a program utility assessment which determined the program's cost-to-benefits ratio (Rossi & Freeman, 1993). I, nonetheless, theorized that such equipment would have collateral applications in the academic domain of Job Corps' Special Needs Program. The Florida Center, therefore, served as the original impact model (Rossi & Freeman, 1993) for the Learning Lab.

The technology impacting the evolution of this type of machinery is advancing at an almost incomprehensible speed. Systems that were truly state-of-the-art like the original Kurzwel Reader became antiquated within a span of several months. The Kurzwel Electronic

Reader, for example, could read words, but not numbers. The system we ultimately acquired can read not only words and numbers, but also several different languages.

In order to keep pace with these technological advances I developed a list of specialists in the discipline of adaptive computer hardware and software. This was accomplished by consulting with the Florida Center for the Blind, the St. Augustine School for the Deaf and Blind, the Florida State Commission for the Blind, and Vocational Rehabilitation. These agencies are experimenting with adaptive computer aides for sensory-impaired people in a variety of circumstances.

The list of vendors was ultimately narrowed to three, those which the collective expert opinion regard as the best in the field. Several meetings were held with the three vendors during this reporting period. In the course of these meetings we discussed the general goal of increasing the academic gains of visually-impaired, hearing-impaired, and dyslexic students. This was to be accomplished by introducing the computer hardware and software into the classroom. The equipment would not be used for testing purposes. Although they were not academicians, they agreed with my hypothesis. Barring any confounding factors (Neufeidt, 1985), they agreed that the intervention of technology should remove many sensory barriers, allowing the student access to the training materials.

The three vendors submitted bids in accordance with the federal government's procurement procedures. This process allowed some flexibility in selecting the winning bid. Since the equipment to be purchased was of a highly specialized nature, price was not necessarily the deciding factor in awarding the contract. Another important consideration was

the vendor's ability to deliver, and install the equipment within our timetable. A third factor was whether the vendor's equipment could be upgraded to handle new technologies. The vendor's ability to adequately train, and provide future support to the Learning Lab technician (see Appendix F) was a fourth factor considered in determining which vendor should be awarded the contract. A New York based company that specializes in adaptive computer equipment was ultimately awarded the contract.

The equipment arrived in several shipments beginning in mid-November, and continued to arrive through January, 1994. Although all of the machines and software had not arrived prior to the commencement of the evaluative study date, sufficient materials were on hand to begin the process. There were some material deviations from the original equipment modality. The fifth work station, which was to have consisted of an Optique II Side by Side Closed Circuit Television Video Enhancer was not purchased due to budgetary constraints (see Appendix D). The effectiveness of such an apparatus as an addition to the academic training modality at Job Corps has been demonstrated by the Magic Screen magnification program. The purchase of this unit at this stage, therefore, would be redundant. As the funding for this program increases, and the number of participants utilizing the Learning Lab grows, we anticipate the future inclusion of this system. I utilized the funds originally allocated for this line item to purchase the WordScholar reading tutorial software instead. WordScholar literally instructs the user in reading, reading comprehension, vocabulary, and pronunciation.

3) The sensory-impaired, and learning disabled students to be tracked in the evaluative study are identified.

The Special Needs Program students, whose academic performance would soon be tracked under the proposed evaluative system, were identified during this period. These students represent the sensory-impaired, and dyslexic student population, or customer group (Connors, 1988) to be impacted by this study. The customer group is composed of sensory-impaired, and learning-disabled students; specifically visually-impaired, hearing-impaired, and dyslexic students. I will, for purposes of specificity (Rossi & Freeman, 1993), distinguish this customer group of special needs students, from other groups of special needs students such as the mobility-impaired, and those with organic brain damage. I will refer to this customer group henceforth in this paper, as the target population (Rossi & Freeman, 1993).

Twelve students representing the target population, were chosen to participate in this study. These students were placed into three general groupings. The first group consisted of four visually-impaired students. The second group consisted of four hearing-impaired students. The final group was made up of four dyslexic students.

In order that the conclusions and implications may be extrapolated and accurately applied to the target population, the subjects of the evaluative study had to be as similar as possible. There is a direct correlation between the similarity of test and control conditions, and the ultimate validity of such a study. If the test and control subjects are similar, there is a greater likelihood of eliminating any measurement fluctuations attributable to chance, or the stochastic effects (Rossi & Freeman, 1993). Many of the stochastic effects which could have resulted, were curtailed by the homogeneous make-up of each group.

The four visually-impaired students were homogeneously selected, and grouped based on

the following criteria:

1) Though their respective visual impairments were the result of differing causes, there was virtually no substantial difference in their visual acuity.

2) Each visually-impaired student possessed an intelligence quotient that fell within the normal range, and did not differ more than five points, plus or minus, based on the Wechsler Intelligence Scale.

3) None of the visually-impaired students were afflicted with a secondary or collateral mental, or learning disability that would impact their ability to cognitively process the academic information.

4) None of the visually-impaired students were afflicted with any secondary physical disabilities that would impact their ability to manipulate the Learning Lab equipment, or the standard modality utilized in the Job Corps classrooms.

The four hearing-impaired students were homogeneously selected, and grouped based on the following criteria:

1) Though their respective hearing impairments were the result of differing causes, there was virtually no substantial difference in their hearing threshold.

2) Each hearing-impaired student possessed an intelligence quotient that fell within the normal range, and did not differ more than five points, plus or minus, based on the Wechsler Intelligence Scale.

3) None of the hearing-impaired students were afflicted with a secondary or collateral

mental, or learning disability that would impact their ability to cognitively process the academic information.

4) None of the hearing-impaired students were afflicted with any secondary physical disabilities that would impact their ability to manipulate the Learning Lab equipment, or the standard modality utilized in the Job Corps classrooms.

The four dyslexic students were homogeneously selected, and grouped based on the following criteria:

1) Each of the dyslexic students manifested differing degrees of reading ability, however, the variation in degrees were limited to a narrow range. All four dyslexic students were relegated to using the most remedial training booklet for GED preparation.

2) Each dyslexic student possessed an intelligence quotient that fell within the normal range, and did not differ more than five points, plus or minus, based on the Wechsler Intelligence Scale.

3) None of the dyslexic students were afflicted with a secondary or collateral mental, or learning disability that would impact their ability to cognitively process the academic information.

4) None of the dyslexic students were afflicted with any secondary physical disabilities that would impact their ability to manipulate the Learning Lab equipment, or the standard modality utilized in the Job Corps classrooms.

By mid-November the procedural prerequisites of building the Learning Laboratory; defining and acquiring the intervention tools; and identifying the students to be tracked in the evaluative study were completed. I was then prepared to begin the substantive portion of the study. This process entailed assessing the twelve test and control subjects to measure their academic levels.

During the period from November 17, 1993 through November 19, 1993 the test and control subjects were administered a simulated version of the Test of Adult Basic Education (TABE) to measure their academic levels at the onset of this study. Without a valid measure (Hummel, 1992) it is virtually impossible to determine whether a subject has made any appreciable academic gains or not. A TABE test is a reliable measure since the results are reproducible in repeated administrations (Rossi & Freeman, 1993).

The TABE test allows the student's knowledge and abilities to be assessed in the following academic areas: math computation, math application, reading vocabulary, and reading comprehension. The test is divided into several levels of difficulty ranging from Book "M" through Books "E," D," & "A," "A" being the most difficult. When students have completed the "A" book they are deemed prepared for the General Education Development (GED) examination. A locator test will determine the TABE book level that the student will test in. Test and control subjects in this study, however, need not function on the same level since the TABE will allow me to measure any academic gains regardless of the operative TABE level.

The TABE was administered in classrooms with more, or less the same physical dimensions. The hearing-impaired students were not allowed any modifications in the testing

material, nor were they allowed the use of reading surrogates. The dyslexic, and the visually-impaired students had the test read aloud to them by surrogates. The results of the baseline simulated TABE test are included in Appendix G.

The baseline test results are significant because they establish the initial operative academic level of each test and control subject. It is, for purposes of this study, irrelevant that one test subject may have scored higher than her control counterpart, or vice versa. The subject, TSVI-1, for example, scored 7.6 on the math computation portion of the baseline test. This score is three points higher than the control counterpart, CSVI-1. Although the test subject's score was three points higher, this score is relevant only to the following degree: 1) it only indicates what the initial operative academic level of the student is prior to the intervention, and 2) the score provides a beginning scale from which to measure any academic gains in terms of numerical points geared toward the grade level; specifically 7.6 is equivalent to seventh grade, six months. As a foundation for measurement, these baseline scores are indispensable. Their total significance, however, can only be ascertained in the broader context of post intervention analysis.

When the pseudo TABE tests were completed, the twelve subjects were matched according to their impairments, then divided into either a test or a control group. These designations were determined through the process of randomization, the assignment of potential targets by chance to experimental and control groups (Rossi & Freeman, 1993). The students were assigned to their respective test and control groups by having their names drawn randomly from a hat. Six were assigned to the three test groups, and their matching opposites were

assigned to the control groups.

The test subjects, or the experimental group is a group to which intervention is delivered and who's outcome measures are compared with those of control groups (Neufeidt, 1985). For purposes of this evaluative study, the experimental groups will be referred to by their initials and numerical designations. Test Subject Visually-Impaired number 1 will henceforth be referred to as TSVI-1. Test Subject Hearing-Impaired number 1 will accordingly be referred to as TSHI-1. Test Subject Dyslexic number 1 will be referred to as TSD-1. The second subject in each test group will be referred to by the numerical designation of number 2. The corresponding control subjects will be identified Control Subject Visually-Impaired number 1, and so forth (see Appendix G).

During the period between December 1, 1993 and December 3, 1993, the test group participants were in-serviced on the use of the sensory-bridging computer hardware and software by the Special Needs Aide (see Appendix F). This instructor introduced the students to the various functions of the three computer workstations. The test students learned to access the Voicetype, voice recognition and dictation system. The students discovered that this system would allow teachers, and classmates to communicate with the deaf students through normal speech. Each workstation comes equipped with a headset and microphone which is connected by wire to the computer terminal. The Learning Lab instructor, and each student in turn put on the headset. As the instructor spoke, the speech was translated into typed words that appeared on the monitor before the hearing-impaired students. The dyslexic students discovered that Voicetype provided them with an alternate medium of communication. The letters and numbers

which form the writings of dyslexic students are typically disorganized. This is a characteristic of the dyslexic condition. The Voicetype system allowed the members of this experimental group to create writings that were comprehensible to instructors and peers. This software and hardware also enabled the visually-impaired students to compose written documents. While this system does allow users with limited use of hands to enter information by voice instead of keyboard, this application was not relevant to this particular study.

The Vocaleyes system translated all typed entries into computerized, synthetic speech. The hearing-impaired students who are unable to speak intelligibly, communicated with the instructor, and other students using this software. These students utilized the keyboard for data entry. The data was translated into speech. Voicetype was used in conjunction with Vocaleyes in communicating with the hearing-impaired students. The vision-impaired and dyslexic students also utilized Vocaleyes. When data was entered by blind or dyslexic students via the keyboard or Voicetype, it was automatically read aloud by the synthesized voice within the computer. The ScanJet scanner was used with the IBM computer, and the above mentioned Voicetype and Vocaleyes software. It performed the following tasks: The test subject placed written material such as the standardized examination on the Scanjet. The examination appeared on the computer monitor. At the same time Vocaleyes read the test aloud for the student.

The blind and dyslexic students in the test group practiced improving their reading skills utilizing the WordScholar software. The users scanned in books and newspaper articles using the Scanjet. Through Voicetype or use of the keyboard, the student commanded WordScholar to read. The system read the articles aloud and intelligibly as the dyslexic student concurrently

read along using the monitor or the hard copy. The visually-impaired students read along using the monitor in conjunction with the Magic Deluxe Screen Magnification Program. When the students encountered unfamiliar words, they stopped the system using Voicetype or the keyboard. WordScholar performed a variety of functions. When the student requested pronunciation assistance, the system enunciated each syllable of the word. When the student did not understand a word, the software produced a dictionary which defined the word using synthetic speech.

The experimental group was introduced to the fourth work station which consists of a Reading Edge Kurzwel Page Reader. This device performed reading tasks for each blind and dyslexic student in the test group. Each student placed a book on the scanning surface of the page reader. The device, through synthetic speech read the material aloud. The students discovered that this system was the simplest of all the alternative training modality available in the Learning Lab.

The computer equipment which has been introduced to the experimental group as the intervention, serves to augment or replace the conventional classroom training modality. As the in-service process proceeded with the test group, the students in the control group were being in-serviced as well. Their training, however was in the use of conventional materials currently utilized at the Gainesville Job Corps Center to prepare sensory-impaired students for the GED.

As part of their in-service training, students in the control group were introduced to surrogates. These surrogates read assignments for the blind and dyslexic students. They also acted as sign interpreters to translate for deaf students. The surrogates demonstrated how they

could compensate for the sensory-impairments and learning disabilities of the control subjects by acting as tutors, interpreters and readers.

Students were trained in the use of tape recorders, books on tape, xeroxed enlargements of reading materials, and plastic page magnifying overlays.

The test and control groups were thoroughly in-serviced in their respective training modalities. Both groups, thereafter, engaged in preparation for the GED examination. The purpose of this experiment is to assess the effectiveness of the intervention modality, and not the training materials. In synopsis, the medium by which the material is being conveyed is in question, rather than the quality or the source of the training material itself. Both test and control groups will be drawing from the same source of academic training material.

During the period from December 6, 1993 through December 17, 1993 and January 4, 1994 through January 14, 1994, the control students reported to their respective academic classrooms. During this time the students in the experimental group reported to the Learning Lab for instruction. The Special Needs Aide administered the curriculum of the Learning Laboratory in accordance with the guidelines provided by the Special Needs Coordinator, and the Director of Education and Training. The instruction in the Learning Laboratory is for the purpose of providing each participating test student an optimum alternative to the education mediums used in the conventional classroom.

January 17, 1994 through January 21, 1994 the interim simulated TABE test was re-administered to measure the academic gains of the test and control group (see Appendix H). The TABE was administered in classrooms with more, or less the same physical dimensions.

The hearing-impaired students were not allowed any modifications in the testing material, nor were they allowed the use of reading surrogates. The dyslexic, and the visually-impaired students had the test read aloud to them by surrogates. The students were also allotted as much time as they needed for testing. The test results for the visually-impaired experimental and control groups were as follows:

In the area of math computation test subject TSVI-1 increased two points from the initial baseline. The second test subject, TSVI-2 suffered a two point decrease from the initial baseline. In the same area the control CSVI-1 experienced no increase, while CSVI-2 suffered a decrease of one point. In general, the visually-impaired test group showed marginal progress in math computation, while the control group actually decreased one point in their combined scores.

In the area of math application test subject TSVI-1 increased five points from the initial baseline. The second test subject, TSVI-2 increased two points from the initial baseline. In the same area the control CSVI-1 experienced no increase, while CSVI-2 experienced an increase of two points. In general, the visually-impaired test group showed substantial progress in math application with a seven point increase, while the control group showed a marginal increase of two points in their combined scores.

In the area of reading vocabulary, test subject TSVI-1 increased no increase from the initial baseline. The second test subject, TSVI-2 experienced a one point increase from the initial baseline. In the same area the control CSVI-1 suffered a loss of one point from the initial baseline, while CSVI-2 also suffered a decrease of one point. In general, the visually-impaired

test group showed marginal progress in reading vocabulary of one point, while the control group actually decreased two points in their combined scores.

In the area of reading comprehension test subject TSVI-1 increased one point from the initial baseline. The second test subject, TSVI-2 showed no increase from the initial baseline. In the same area the control CSVI-1 experienced a one point increase, while CSVI-2 experienced an increase of one point. In general, the visually-impaired test group experienced marginal progress in reading comprehension, while the control group showed a marginal increase of two points in their combined scores.

The test results for the hearing-impaired experimental and control groups were as follows: In the area of math computation test subject TSHI-1 increased one point from the initial baseline. The second test subject, TSHI-2 experienced a two point increase from the initial baseline. In the same area the control CSHI-1 experienced no increase, while CSHI-2 experienced a one point increase from the initial baseline. In general, the hearing-impaired test group showed marginal progress with an overall increase of three points from baseline in math computation, while the control group also showed marginal progress with a one point increase in their combined scores.

In the area of math application test subject TSHI-1 suffered a one point decrease from the initial baseline. The second test subject, TSHI-2 experienced a three point increase from the initial baseline. In the same area the control CSHI-1 experienced no increase, while CSHI-2 experienced an increase of one point. In general, the hearing-impaired test group showed marginal progress in math application with a two point increase, while the control group showed

a marginal increase of one point in their combined scores.

The test results for the hearing-impaired experimental and control groups were as follows: In the area of reading vocabulary test subject TSHI-1 increased two points from the initial baseline. The second test subject, TSHI-2 experienced an increase of one point from the initial baseline. In the same area the control CSHI-1 experienced a two point increase, while CSHI-2 suffered a two point decrease from the initial baseline. In general, the hearing-impaired test group showed marginal progress with an overall increase of three points from baseline in reading vocabulary, while the control group also showed no overall progress in their combined scores.

In the area of reading comprehension test subject TSHI-1 experienced a one point increase from the initial baseline. The second test subject, TSHI-2 experienced a one point increase from the initial baseline. In the same area the control CSHI-1 experienced no increase, while CSHI-2 suffered a one point decrease from the initial baseline. In general, the hearing-impaired test group showed marginal progress in reading comprehension with a two point increase, while the control group showed a one point decrease in their combined scores.

The test results for the dyslexic experimental and control groups were as follows: In the area of math computation test subject TSD-1 showed no increase from the initial baseline. The second test subject, TSD-2 experienced a three point increase from the initial baseline. In the same area the control CSD-1 suffered a two point decrease from the initial baseline, while CSD-2 experienced a one point increase from the initial baseline. In general, the dyslexic test group showed marginal progress with an overall increase of three points from baseline in math

computation, while the control group also showed marginal progress with an overall one point increase in their combined scores.

In the area of math application test subject TSD-1 experienced an increase of two points from the initial baseline. The second test subject, TSD-2 experienced a two point increase from the initial baseline. In the same area the control CSD-1 experienced no increase, while CSD-2 suffered a decrease of one point from their baseline scores. In general, the dyslexic test group showed marginal progress in math application with a four point increase, while the control group suffered a decrease of one point in their combined scores.

The test results for the dyslexic experimental and control groups were as follows: In the area of reading vocabulary test subject TSD-1 showed no increase from the initial baseline. The second test subject, TSD-2 experienced a three point increase from the initial baseline. In the same area the control CSD-1 showed no increase from the initial baseline, while CSD-2 experienced a two point increase from the initial baseline. In general, the dyslexic test group showed marginal progress with an overall increase of three points from baseline in reading vocabulary, while the control group also showed marginal progress with an overall two point increase in their combined scores.

In the area of reading comprehension test subject TSD-1 experienced an increase of three points from the initial baseline. The second test subject, TSD-2 experienced a four point increase from the initial baseline. In the same area the control CSD-1 experienced no increase, while CSD-2 suffered a decrease of one point from their baseline scores. In general, the dyslexic test group showed substantial progress in reading comprehension with a seven point

increase, while the control group suffered a decrease of one point in their combined scores.

The scores achieved by experimental and control subjects on the second TABE test appear to demonstrate a clear pattern (see Appendix H). The test group of visually-impaired, hearing-impaired, and dyslexic students appear to have made substantial gains overall during this interim period. These gains are substantial as opposed to the marginal increases achieved by the control group. The visually-impaired test group experienced an overall nine point gain in all areas since introduction of the intervention, as compared to an overall one point gain by the control counterparts. The hearing-impaired test group experienced an overall ten point gain in all areas since introduction of the intervention, as compared to an overall decrease of three points suffered by their control counterparts. The dyslexic test group experienced a substantial 17 point gain in all areas since the introduction of the intervention, as compared to an overall increase of one point by the control counterparts.

During the period of January 24, 1994 through February 28, 1994 the test and control students continued academic study in their respective modalities in preparation for the General Education Development examination (GED).

On March 1, 1994, the mock General Education Development examination was administered to the test and control groups (see Appendix I). The mock GED was administered in classrooms with more, or less the same physical dimensions. The hearing-impaired students were not allowed any modifications in the testing material, nor were they allowed the use of reading surrogates. The dyslexic, and the visually-impaired students had the test read aloud to them by surrogates. The students were also allotted as much time as they needed for testing.

The overall mock GED test results for the visually-impaired test and control groups were as follows:

The students in the test group with vision impairments experienced an overall increase of 42 points. This increase reflects gains in all areas. Their control counterparts experienced marginal gains of only nine points in all areas.

The students in the test group with hearing impairments experienced an overall increase of 33 points. This increase reflects gains in all areas. Their control counterparts experienced marginal gains of only 13 points in all areas.

The students in the test group with dyslexia experienced an overall increase of 60 points. This increase reflects gains in all areas. Their control counterparts experienced marginal gains of only ten points in all areas.

The results of the simulated GED test (see Appendix I) reflect the collective scores of the participants in the experimental group compared to those of the control group. Substantial increases were experienced by each of the test groups. These global increases represent individual gains experienced by individual members of each test group. There were, in fact, substantial increases on individual tests as exhibited by higher scores achieved in the various areas since the baseline, and interim examinations. These increases in the test group's overall and individual scores occurred after the introduction of the intervention. The objectives as stated in Chapter 3, and the subsequent outcomes are as follows:

Objective 1) To have the two visually-impaired participants in the test group, score a minimum of 10 percentage points higher than the control group of matched students

taking a mock General Education Development (GED) examination.

Outcome 1) The two visually-impaired participants in the test group scored 33 percentage points higher than the control group of matched students taking the mock General Education Development (GED) examination.

Objective 2) To have the two hearing-impaired participants in the test group, score a minimum of 10 percentage points higher than the control group of matched students taking a mock General Education Development (GED) examination.

Outcome 2) The two hearing-impaired participants in the test group scored 20 percentage points higher than the control group of matched students taking the mock General Education Development (GED) examination.

Objective 3) To have the two dyslexic students score a minimum of 10 percentage points higher than the control group of matched students taking a mock General Education Development (GED) examination.

Outcome 3) The two dyslexic students scored 50 percentage points higher than the control group of matched students taking the mock General Education Development (GED) examination.

The outcomes appear to be the direct result of the intervention modality. These results, further, exceed all initial expectations as they surpass the projected outcome stated in the objectives.

Chapter 6

CONCLUSION - IMPLICATIONS AND RECOMMENDATIONS

The sensory-bridging computer hardware and software are the nucleus of the Learning Lab. This technology appears to be a viable alternative to the existing modalities currently utilized to prepare visually-impaired, hearing-impaired, and dyslexic students for the General Education Development (GED) examination. The findings of the test and control study would tend to support this supposition. The visually-impaired, hearing-impaired, and dyslexic test subjects achieved substantially higher academic gains when exposed to the intervention. These gains were proportionately higher than those experienced by their control counterparts. These increases were progressive from one test to the next as exhibited by each of the three experimental groups. One very surprising result of this study is in the realm of intervention as applied to dyslexic students. The dyslexic test subjects scored 50 points higher than their control counterparts who prepared for the examination using readers, and tape-recordings of the academic training material.

The implications of these findings appear to be that students using the Learning Lab equipment had access to a broader range of instructional materials than did a substantial segment of the control group. These students did not need an interpreter, or reader to be available at a given moment to access ancillary sources of information such as a dictionary for quick reference, a newspaper article, or cursory conversations between students that might yield an exchange of academic information. Students using the Learning Lab equipment were afforded an opportunity

for more in-depth analysis of the subject matter in that their access to the modality, or medium, was not curtailed by time constraints. The subjectivity of the interpreter or reader as a medium could impede the comprehension of the subject matter conveyed, due to the subjective nature of the surrogate. The electronic medium, however, is void of this subjective interference and allows the student unimpeded access to knowledge conveyed through the training materials.

The Learning Lab concept appears to be viable as a method of augmenting, or as an alternative to conventional methods of teaching sensory-impaired and dyslexic students. The apparent success of this project has produced findings that may be generalized (Rossi & Freeman, 1993) or rather extrapolated to similar programs. There are, for example, eight other Special Needs centers operated by the Department of Labor's Job Corps program. The Learning Lab intervention could be introduced at these centers. If the TABE test is in fact a reliable measure of a student's academic progress, then the improvements in the TABE scores of the experimental group can be reproduced (Rossi & Freeman, 1993). The improvements reflect the effectiveness of the Learning Lab intervention.

The Learning Lab intervention could be introduced into environments, not merely Job Corps environments, whose target populations match the target population that benefited from the intervention at the Gainesville Job Corps Center. If the results of this study could be duplicated, then the Department of Labor could take a significant step forward in fulfilling the federal mandate of training sensory-impaired and learning disabled students.

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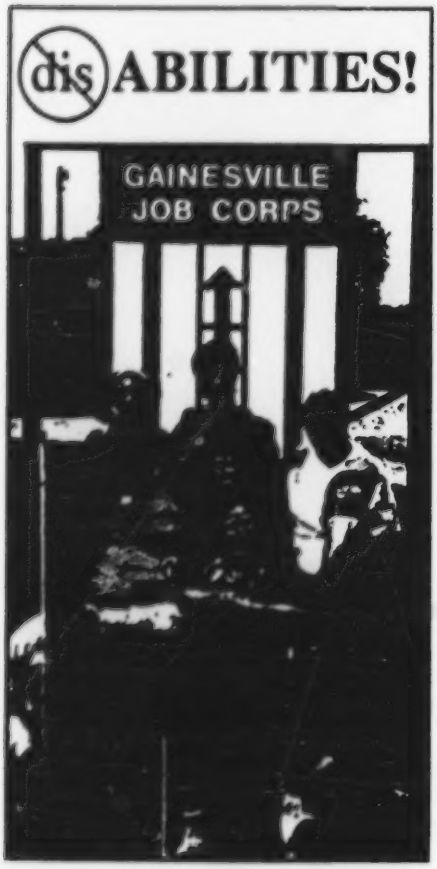
APPENDIX A

SPECIAL NEEDS PROGRAM



Train for your FUTURE

Gainesville Job Corps Center

Appendix B

RESULTS OF REPUTABILITY STUDY

A reputability study was conducted to obtain, from 20 relevant stakeholders, data on their experiences with, and assessments of, the Gainesville Job Corps Center's basic academic, and GED preparation classes. The following is synopsis of those responses.

1) Did you benefit from participation in the GED or basic academic program at the Gainesville Job Corps Center?

Yes: 1 No: 17 Uncertain: 2

2) Were you able to utilize the textbooks and materials available to you in the GED or basic academic class?

Yes: 1 No: 19 Uncertain: ___

3) Did your overall scores on the TABE test increase since your enrollment in GED or basic academic classes at the Gainesville Job Corps Center?

Yes: 4 No: 14 Uncertain: 2

4) Were you able to complete as many assignments as your non-handicapped classmates?

Yes: ___ No: 20 Uncertain: ___

5) Did you obtain a GED while enrolled at the Gainesville Job Corps Center?

Yes: ___ No: 18 Uncertain: 2 *

* student's obtained special diploma

6) Did the materials available to you in your classrooms help you learn in preparation for the GED?

Yes: ___ No: 20 Uncertain: ___

Appendix C

RESULTS OF EVALUABILITY ASSESSMENT

An evaluability assessment of nine teachers was conducted to obtain data on the effectiveness of classroom surrogates such as readers, interpreters, and tutors. Teachers were asked to assess the impact of these surrogates in increasing the overall academic performance of visually-impaired, hearing-impaired, and dyslexic students. The following is synopsis of those responses.

1) Did visually-impaired, hearing-impaired, and dyslexic students interact effectively with readers, tutors, and interpreters in the classroom?

Yes: 5 No: 2 Uncertain: 2

2) Did the academic gains of visually-impaired, hearing-impaired, and dyslexic students increase as a result of this teaching modality?

Yes: 7 No: 1 Uncertain: 1

3) Were the academic gains of visually-impaired, hearing-impaired, and dyslexic students reflected in their performance on standardized TABE tests?

Yes: 7 No: 2 Uncertain: ___

4) Were surrogates available for the duration of the class each class day of the week?

Yes: ___ No: 9 Uncertain: ___

5) Do you think that visually-impaired, hearing-impaired, and dyslexic students would have greater academic gains if the surrogates could provide more time for each individual student during classroom training?

Yes: 9 No: ___ Uncertain: ___

6) Could visually-impaired, hearing-impaired, and dyslexic students make academic gains using conventional modality such as teachers, books, assignments, and lectures without the use of readers, interpreters, and tutors?

Yes: ___ No: 8 Uncertain: 1

Appendix D

THE LEARNING LABORATORY BUDGET

Item #	Description	Qty	Unit Price	Extension
1	IBM Ultimedia M67 Model 95571FA 8MB RAM 212HD	3	2,997.43	8,992.29
2	60" Anthrocart	4	549.00	2,196.00
3	36" Printer (Kurzwel) cart	1	299.00	299.00
4	IBM Voicetype Voice Recognition	3	2,195.00	6,585.00
5	Nitzbon Chairs (Max Amt)	3	1,795.00	5,385.00
6	WordPerfect 5.1	3	279.95	839.85
7	Vocaleyes Screen Access for the blind	3	500.00	1,500.00
8	Dectalk PC Internal Speech synthesizer	3	995.00	2,985.00
9	14.4 Modem External	1	300.00	300.00
10	Shipping of Furniture	1	700.00	700.00
11	On-site training & installation per day	3	500.00	1,500.00
12	Trainer/installer Travel Expenses (air fare/hotel)	1	1,000.00	1,000.00
13	Magic Deluxe Magnification Program	3	295.00	885.00
14	WordScholar	3	1,605.00	1,605.00
15	IBM Laser 4039 with Postscript	3	1,392.00	4,176.00
16	Magnavox 20" Monitor	3	1,395.00	4,185.00
17	HP Scanjet IIc	3	1,299.00	3,897.00
18	The Reading Edge	1	5,014.18	5,014.18
19	R.E. carrying case	1	136.87	136.87
	TOTAL			52,181.19

APPENDIX E

The Learning Laboratory

(See Attached Videotape)

APPENDIX F

Gainesville Job Corps Center

Position:		Special Needs Aide
Department/Division:		Education & Training
Line or Staff:		Line
Management Level:		None
Pay Level:		Hourly
Immediate Supervisor:		Special Needs Coordinator
Immediate Subordinates:		Students
Functional Authority:	To: Students	From: Special Needs Coordinator

Primary Location of Work: Learning Lab

Approved by: B. Kurupachery, Center Director

Date Prepared/Revised: October 4, 1993

Gainesville Job Corps Center

Position: Special Needs Aide

Overall Purpose of Job

The general purpose of this job is to instruct vision impaired, hearing impaired, non-ambulatory, and learning disabled students at the Gainesville Job Corps Center. In addition the Special Needs Aide will administer the curriculum of the Learning Laboratory in accordance with the guidelines provided by the Special Needs Coordinator, and the Director of Education and Training. The instruction in the Learning Laboratory is for the purpose of enabling each participating challenged student to attain the equivalent of a high school diploma. This training runs concurrent with vocational education courses which are designed to enable the student to successfully attain trade certification.

Asset Accountability

	$ Value
1. (SEE APPENDIX D FOR TOTAL LIST OF LEARNING LAB ASSETS)	$52,181.19

Duties and Responsibilities

Priority	% Time
1. Manages Special Needs students utilizing the Learning Laboratory.	
A. Instructional Duties	75%

Gainesville Job Corps Center

Position: Special Needs Aide

a. Utilizes computer teaching aides such as IBM computers, voice-activated computer software, artificial elocutionary devises, and other materials as necessary.

b. Prepares teaching outline for course of study, assigns lessons, administers tests, and corrects papers.

c. Promotes a positive and desirable atmosphere within the Learning Lab setting to maximize student motivation and learning.

d. Observes vocational classes and relates vocational curriculum to Learning Lab objectives.

Gainesville Job Corps Center

Position: Special Needs Aide

B. Operative Duties 15%

a. Maintains student academic files, including test scores, evaluations, attendance, achievement, and other pertinent information.

b. Ensures proper care of equipment and supplies.

2. Upward Responsibility

A. Operative Duties 10%

a. Responsible for reports required by the Education and Training Director, and the Special Needs Coordinator.

b. Performs other duties as assigned by the Special Needs Coordinator.

Independent Authority

The Special Needs Aide may make any procedural changes while conducting her class so long as those procedural changes do not deviate from the established curriculum, and Center policy and procedure.

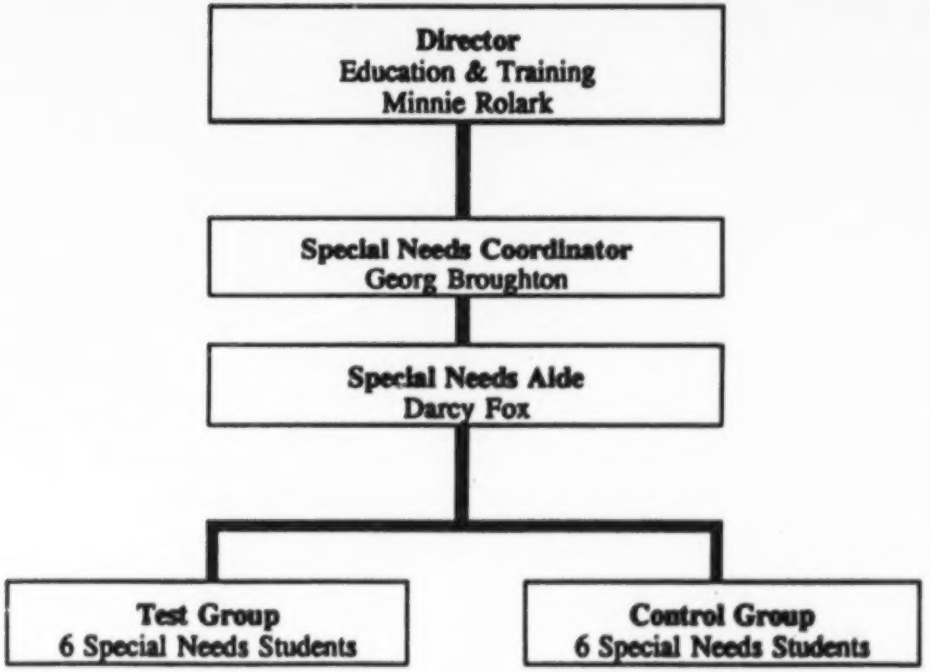
Person Specifications

Upper division credit from a regionally accredited college or university. Must have prior experience working with sensory impaired and physically challenged adolescents. Must be interested in intellectually, and emotionally capable of working with the student population and center staff members. Must be mature, flexible, cooperative, and empathetic to the total needs of the students.

ORGANIZATIONAL CHART

The organizational chart depicts the relationship between the Special Needs Aide, the Special Needs Coordinator, and the students.

Organizational Chart
Gainesville Job Corps Center
Issued December 1, 1993
Approved:_____



Appendix G

Baseline Results of Simulated TABE Test For Participants in Evaluative Study - Test #1

	Math Computation			Math Application			Reading Vocabulary			Reading Comprehension		
	TEST NUMBER AND STUDENT SCORES											
	1	2	3	1	2	3	1	2	3	1	2	3
TSVI-1	7.6	-	-	9.0	-	-	10.9	-	-	10.7	-	-
CSVI-1	7.3	-	-	4.6	-	-	3.8	-	-	6.4	-	-
TSVI-2	9.2	-	-	11.0	-	-	10.9	-	-	10.9	-	-
CSVI-2	7.0	-	-	9.0	-	-	9.8	-	-	8.8	-	-
TSHI-1	7.4	-	-	4.5	-	-	3.3	-	-	8.9	-	-
CSHI-1	10.5	-	-	8.0	-	-	9.5	-	-	10.4	-	-
TSHI-2	5.3	-	-	2.2	-	-	2.4	-	-	2.6	-	-
CSHI-2	5.5	-	-	5.6	-	-	6.0	-	-	6.5	-	-
TSD-1	10.0	-	-	9.5	-	-	6.0	-	-	6.0	-	-
CSD-1	7.2	-	-	9.0	-	-	6.2	-	-	7.0	-	-
TSD-2	5.9	-	-	6.5	-	-	6.0	-	-	5.0	-	-
CSD-2	5.3	-	-	6.2	-	-	7.9	-	-	7.5	-	-

This chart identifies each test and control subject by the initials of their impairment and their numerical designation. For documentation purposes this chart also depicts the test subjects randomized and matched with their control counterparts.

Appendix H

Interim Results of Simulated TABE Test - Test #2

	Math Computation			Math Application			Reading Vocabulary			Reading Comprehension		
	TEST NUMBER AND STUDENT SCORES											
	1	2	3	1	2	3	1	2	3	1	2	3
TSVI-1	7.6	*7.8	-	9.0	*9.5	-	10.9	10.9	-	10.7	*10.8	-
CSVI-1	7.3	7.3	-	4.6	4.6	-	3.8	3.7	-	6.4	*6.5	-
TSVI-2	9.2	9.0	-	11.0	*11.2	-	10.9	*11.0	-	10.9	10.9	-
CSVI-2	7.0	6.9	-	9.0	*9.2	-	9.8	9.7	-	8.8	*8.9	-
TSHI-1	7.4	*7.5	-	4.5	4.4	-	3.3	*3.5	-	8.9	*9.0	-
CSHI-1	10.5	10.5	-	8.0	8.0	-	9.5	*9.7	-	10.4	10.4	-
TSHI-2	5.3	*5.5	-	2.2	*2.5	-	2.4	*2.5	-	2.6	*2.7	-
CSHI-2	5.5	*5.6	-	5.6	*5.7	-	6.0	5.8	-	6.5	6.4	-
TSD-1	10.0	10.0	-	9.5	*9.7	-	6.0	6.0	-	6.0	*6.3	-
CSD-1	7.2	7.0	-	9.0	9.0	-	6.2	6.2	-	7.0	7.0	-
TSD-2	5.9	*6.2	-	6.5	*6.7	-	6.0	*6.3	-	5.0	*5.4	-
CSD-2	5.3	*5.4	-	6.2	6.1	-	7.9	*8.1	-	7.5	*7.6	-

An asterisk * denotes an increase in test score.

Appendix I

Results of Simulated GED Test - Test #3

	Math Computation			Math Application			Reading Vocabulary			Reading Comprehension		
	TEST NUMBER AND STUDENT SCORES											
	1	2	3	1	2	3	1	2	3	1	2	3
TSVI-1	7.6	*7.8	*8.1	9.0	*9.5	*9.9	10.9	10.9	*11.3	10.7	*10.8	*11.5
CSVI-1	7.3	7.3	*7.4	4.6	4.6	*4.8	3.8	3.7	*3.9	6.4	*6.5	*6.7
TSVI-2	9.2	9.0	*9.4	11.0	*11.2	*11.5	10.9	*11.0	*11.5	10.9	10.9	*11.2
CSVI-2	7.0	6.9	6.9	9.0	*9.2	9.1	9.8	9.7	9.7	8.8	*8.9	*9.1
TSHI-1	7.4	*7.5	*7.7	4.5	4.4	*4.7	3.3	*3.5	*3.7	8.9	*9.0	*9.6
CSHI-1	10.5	10.5	*10.6	8.0	8.0	*8.1	9.5	*9.7	*9.9	10.4	10.4	*10.7
TSHI-2	5.3	*5.5	*5.9	2.2	*2.5	*2.6	2.4	*2.5	*2.8	2.6	*2.7	*2.9
CSHI-2	5.5	*5.6	*5.7	5.6	*5.7	*5.9	6.0	5.8	*6.0	6.5	6.4	6.4
TSD-1	10.0	10.0	*11.5	9.5	*9.7	*9.9	6.0	6.0	*6.5	6.0	*6.3	*6.8
CSD-1	7.2	7.0	7.0	9.0	9.0	9.0	6.2	6.2	*6.3	7.0	7.0	*7.3
TSD-2	5.9	*6.2	*6.7	6.5	*6.7	*6.8	6.0	*6.3	*6.9	5.0	*5.4	*5.8
CSD-2	5.3	*5.4	*5.6	6.2	6.1	6.1	7.9	*8.1	*8.4	7.5	*7.6	7.6

An asterisk * denotes an increase in test score.